

Implementation of an Integrated Groundwater Database System for Linking and Sharing Data Between Agencies in Illinois Using GIS and the Web

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Biographical Sketches of Authors

Steve Wilson is a groundwater hydrologist at the ISWS. He has a Masters Degree in Civil Engineering from the University of Illinois. Mr. Wilson has been involved in numerous groundwater assessment projects dealing with both groundwater quantity and quality issues. He is currently involved in the collection of water quality data in a cooperative effort with the Illinois EPA, Illinois Department of Public Health and six county health departments in the Chicago area. He recently completed an evaluation of the statewide arsenic occurrence in groundwater and is working with ISWS staff in converting historical data into a new, user-friendly system.

H. Allen Wehrmann is a Senior Hydrologist and Head of the Groundwater Section at the ISWS with over 25 years of experience in conducting groundwater resource and contamination investigations. Mr. Wehrmann is a registered Professional Engineer in Illinois, and is a certified Professional Groundwater Hydrologist by the American Institute of Hydrology. Throughout his career, Mr. Wehrmann has conducted and analyzed numerous aquifer tests across Illinois through which he became intimately familiar with the Survey's Aquifer Hydraulic Properties Database. Mr. Wehrmann's research interests include the use of new technologies for hydrogeologic site characterization and data-sharing.

Jonathan Foote is a Programmer/Analyst at the Illinois State Water Survey. His education and experience is in engineering and software design. His expertise is with client/server database software development. Mr. Foote has served as project leader on several large information systems projects. He is presently working with the Groundwater section of the Illinois State Water Survey where he has developed and is currently managing various integrated information systems.

Kingsley Allan is Associate Professional Scientist and heads the ISWS GIS group. His work involves map making, modeling, and database building for various projects including past and current contracts with Illinois EPA, Illinois Emergency Management Agency, and National Science Foundation. He authors/maintains a GIS help site of more than 50 web pages (<http://www.sws.uiuc.edu/chief/gis>). He is a strong advocate of data sharing, and helped publish the first CD-ROM of statewide GIS data for Illinois. Kingsley is an active GIS software trainer. He is a recipient of an Illinois GIS Association (ILGISA) service award and is currently co-Chair of the association.

Abstract

Formed in 1895, the Illinois State Water Survey (ISWS) is a truly unique state agency, charged with collecting data and conducting research on the water resources of Illinois. The ISWS Groundwater Section maintains numerous groundwater-related databases. These include groundwater quality, water use (withdrawals), groundwater levels, aquifer hydraulic properties, and drillers records for water wells (private, public, industrial, irrigation, etc.). The databases are being integrated into a SQL-structured system that will link information by well and location. A key feature of database development is the addition of spatial location information for all data, allowing the data to be imported into ArcSDE and ArcIMS, so that public information can be shared dynamically over the web within a GIS environment.

The first implementation of this new data structure/integration will link selected sets of the ISWS data to the Illinois Environmental Protection Agency's (IEPA) Source Water Assessment and Protection (SWAP) Program website. SWAP-linked data include annual water withdrawals from Illinois community and self-supplied industries, ambient groundwater quality data, and aquifer hydraulic properties data from hundreds of aquifer tests performed throughout Illinois over the past 50+ years. These data are now available to SWAP users, which includes local, county, and state units of government, as well as the USGS, allowing scientists and agency personnel access to the wealth of groundwater information stored at the ISWS. This has led to efforts to share new research findings and results with ISWS scientists and help promote collaboration between agencies in evaluating and analyzing groundwater quality conditions in Illinois.

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